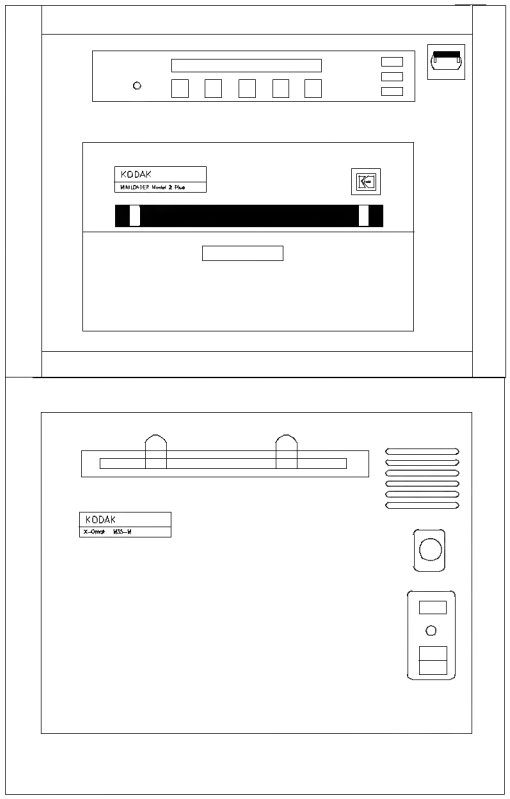
Publication No. TG 3420
April 1995

# THEORY GUIDE

## for the

# *Kodak* MINILOADER 2 PLUS LOW VOLTAGE




Use this Publication for:-
MINILOADER 2 Plus Low Voltage Model Stand-alone (SV code 3419), MINILOADER 2 Plus Low Voltage Model M35-M (SV code 3420) and MINILOADER 2 Plus Low Voltage Model 480RA (SV code 3421).

HEALTH SCIENCES DIVISION

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**CAUTION**

This equipment includes parts and assemblies sensitive to damage from electrostatic discharge. Use caution to prevent damage during all service procedures.

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# PARAMETER DESCRIPTIONS.

**When setting PARAMETERS, if a value outside the permitted range is selected the message !! ERROR !! with the permitted range in brackets will be displayed.**

## PARAMETER P1 - CASSETTE AIR BLOW PAUSE.

When ENCODER STEP [PARAMETER P8 for 18 x 24, PARAMETER P9 for 24 x 30 or STEP 30 for 8 x 10"] is reached, the CAM MOTOR M7 stops and the CASSETTE INJECTOR is energised to blow the FILM off the CASSETTE SCREEN. After the blow, a pause of duration P1 seconds occurs to allow time for the dislodged FILM to drop from the CASSETTE SCREEN into the base of the CASSETTE. This ensures the FILM is in the correct place to be picked up by the SUCKERS.

Increase this PARAMETER if difficulty is experienced in removing FILMS from the CASSETTE SCREEN. Also consider setting SWITCH SW304 on PCB 403 to ON to give three blows in the CASSETTE. Lengthening the time delay will lengthen the cycle time of the MINILOADER by the same amount. Selecting three blows in the CASSETTE will lengthen the cycle time by 2 seconds.

Note: The PARAMETER P1 delay only occurs the first time the CASSETTE INJECTOR is energised. If PHOTOCELL FC4 detects a FILM on the CASSETTE SCREEN later in the cycle and the CASSETTE LID is closed to the blow position again, the delay that occurs for the FILM to drop after the blow is fixed in the PROGRAM and cannot be altered.

**Default value: 1.5 seconds.**

**Permitted Range: 1.5 to 3.5 seconds.**

## PARAMETER P2 - MAGAZINE FILM SEPARATION BLOW PAUSE.

When ENCODER STEP 108 is reached, the CAM MOTOR M7 stops and the MAGAZINE INJECTOR is energised to separate the FILMS in the MAGAZINE. A pause of duration P2 seconds occurs to allow time for the INJECTOR to separate the FILMS in the MAGAZINE.

Increase this PARAMETER if MULTIPLE FILM LOADS are a problem. PARAMETER P5 (TILT PAUSE) may also need to be increased. Also consider setting SWITCH SW303 on PCB 403 to ON to give three blows in the MAGAZINE. Lengthening the time delay will lengthen the cycle time of the MINILOADER by the same amount. Selecting three blows in the MAGAZINE will lengthen the cycle time by 2 seconds.

**Default value: 1.5 seconds.**

**Permitted Range: 1.5 to 3.5 seconds.**

## PARAMETER P3 - MULTIPLE FILM LOAD DETECTION PAUSE.

When ENCODER STEP [PARAMETER P11 for 18 x 24, PARAMETER P12 for 24 x 30] is reached, the CAM MOTOR M7 stops. A pause of duration P3 seconds occurs to allow time for the FILM position to stabilise before the reading is made to determine whether a MULTIPLE FILM LOAD has occurred.

Increase this PARAMETER if detection of MULTIPLE FILM LOADS is a problem. Lengthening the time delay will lengthen the cycle time of the MINILOADER by the same amount.

**Default value: 0.5 seconds.**

**Permitted Range: 0.3 to 2.8 seconds.**

## PARAMETER P4 - GAP BETWEEN FILMS.

**NOTE - THIS PARAMETER IS PRESENT IN STAND-ALONE VERSIONS OF SOFTWARE, BUT HAS NO EFFECT.**

When ENCODER STEP 108 is reached, the CAM MOTOR M7 stops to pick up the FILMS. PHOTOCELLS FC7 and FC9 (on M35-M version) are checked for presence of FILM in the CHUTE. If a FILM is present a delay of up to 30 seconds (fixed in the PROGRAM) commences. If the FILM clears the PHOTOCELLS during this time a further delay of P4 seconds occurs to allow the film to enter the PROCESSOR fully before another FILM is unloaded.

This PARAMETER has to be set to suit the speed of the PROCESSOR being used. Set the value of this PARAMETER last as the values of other PARAMETERS will affect how much time delay is required. For a M35-M PROCESSOR in EXTENDED CYCLE a delay of 5 seconds may be required. Set the value, select SERIAL MODE and process several FILMS. If the gap between successive FILM exiting from the PROCESSOR is too little, increase the PARAMETER; if it is too much, decrease the PARAMETER.

NOTE: If you have to set time into this PARAMETER, consider increasing the time delays given by other PARAMETERS which can use the required time delay more productively.

**Default value: 0 seconds**

**Permitted Range: 0 to 20.0 seconds.**

## PARAMETER P5 - TILT PAUSE.

After the delay set by PARAMETER P2 (MAGAZINE FILM SEPARATION BLOW PAUSE) has elapsed, the TILT MOTOR M5 is energised and the MAGAZINE SUCKER BAR is raised and tilted. A time delay set by PARAMETER P5 occurs to allow time for any extra films picked up from the MAGAZINE SUCKER BAR to drop back into the MAGAZINE before the CAM MOTOR restarts.

Increase this PARAMETER if MULTIPLE FILM LOADS are a problem. PARAMETER P2 (MAGAZINE FILM SEPARATION BLOW PAUSE) may also need to be increased. Also consider setting SWITCH SW303 on PCB 403 to ON to give three blows in the MAGAZINE. Lengthening the time delay will lengthen the cycle time of the MINILOADER by the same amount. Selecting three blows in the MAGAZINE will lengthen the cycle time by 2 seconds.

**Default value: 2.0 seconds.**

**Permitted Range: 1.5 to 3.5 seconds.**

## PARAMETER P6 - CASSETTE WAITING TIME.

**This PARAMETER is only active when CONTINUOUS CYCLES have been selected by DIPSWITCH 1 on PCB 401.**

When the MINILOADER is in CONTINUOUS CYCLES it is possible to set a time delay of P6 seconds between consecutive cycles. For example, this can be useful when checking for FILM separation from the CASSETTE SCREEN as the longer the FILM has remained in the CASSETTE, the more likely it is to stick to the SCREEN.

**Default value: 0 seconds.**

**Permitted Range: 0 to 999 seconds.**

## PARAMETER P7 - CASSETTE REVERSE AND CLOSING TIME.

**This PARAMETER is only active when CONTINUOUS CYCLES have been selected by DIPSWITCH 1 on PCB 401.**

When the MINILOADER is in CONTINUOUS CYCLES, the CASSETTE CONVEYOR will stop running in reverse at the end of each cycle as soon as the CASSETTE interrupts PHOTOCELL FC2. To ensure the CASSETTE is correctly closed by the CLOSING ROLLERS, it is necessary to run the CASSETTE CONVEYOR BELT for a further time set by PARAMETER P7.

If the time is set too high, the CASSETTE will be driven too far out of the MINILOADER and the ROLLERS will not be able to draw it back in for the next cycle. It may be necessary to set different times for 18 x 24 cm and 24 x 30 cm CASSETTES.

**Default value: 0.2 seconds.**

**Permitted Range: 0 to 1.5 seconds.**

## PARAMETER P8 - AIR BLOW CASSETTE OPENING 18.24

When the MINILOADER is in operation with 18 x 24 CASSETTES and ENCODER STEP PARAMETER P8 is reached, the CAM MOTOR stops and the CASSETTE INJECTOR is energised to blow the FILM off the CASSETTE SCREEN. Altering this PARAMETER allows the amount the CASSETTE is open to be controlled precisely. For the best separation of FILMS from the CASSETTE SCREEN, the CASSETTE should be open 15 mm. Smaller openings prevent the INJECTOR from working correctly, while larger openings may allow the FILM to drop incorrectly into the base of the CASSETTE.

For a detailed instruction for setting this PARAMETER, see section *CASSETTE INJECTOR ADJUSTMENT* in the SERVICE MANUAL.

Note: Unlike the PARAMETERS P1 to P7 this value is not a time, it is an ENCODER STEP number.

**Default value: ENCODER STEP 030**

**Permitted range: ENCODER STEP 026 to 032**

## PARAMETER P9 - AIR BLOW CASSETTE OPENING 24.30

When the MINILOADER is in operation with 24 x 30 CASSETTES and ENCODER STEP PARAMETER P9 is reached, the CAM MOTOR stops and the CASSETTE INJECTOR is energised to blow the FILM off the CASSETTE SCREEN. Altering this PARAMETER allows the amount the CASSETTE is open to be controlled precisely. For the best separation of FILMS from the CASSETTE SCREEN, the CASSETTE should be open 15 mm. Smaller openings prevent the INJECTOR from working correctly, while larger openings may allow the FILM to drop incorrectly into the base of the CASSETTE.

For a detailed instruction for setting this PARAMETER, see section *CASSETTE INJECTOR ADJUSTMENT* in the SERVICE MANUAL.

Note: Unlike the PARAMETERS P1 to P7 this value is not a time, it is an ENCODER STEP number.

**Default value: ENCODER STEP 030**

**Permitted range: ENCODER STEP 026 to 032**

## PARAMETER P10 - DISPLAY BRIGHTNESS

This PARAMETER controls the brightness of the 40 DIGIT DISPLAY. The purpose of this PARAMET is to be able to use the MINILOADER in a darkroom. Increasing P10 dims the DISPLAY, increasing it brightens the DISPLAY. If the DISPLAY is still too bright with the PARAMETER at maximum, fit the RED FILTER part number 30026275 inside the FRONT PANEL and readjust the paramet to allow the DISPLAY to be read in normal room lighting as well as in darkroom conditions. The brightness of the, "TRAFFIC LIGHTS" can be controled by POTENTIOMETER R211 on PCB 502.

**Default value: 2**

**Permitted range: 1 to 4 (1 bright, 4 dim)**

## PARAMETER P11 - MULTIPLE FILM CHECK 18.24

When the MINILOADER is in operation with 18 x 24 CASSETTES and ENCODER STEP PARAMETER P11 is reached, the CAM MOTOR stops for PARAMETER P3 seconds for the MULTIPLE FILM CHECK to be made. Altering this PARAMETER allows the position of the FILM in the MULTIPLE FILM DETECTOR to be controlled precisely. The leading edge of the FILM should be approximately 30 mm into the DETECTOR. If the CHECK is made with the FILM not far enough into the dectector or too far in errors will arise.

For a detailed instruction for setting this PARAMETER, see section *MULTIPLE FILM CHECK* in the SERVICE MANUAL.

Note: Unlike the PARAMETERS P1 to P7 this value is not a time, it is an ENCODER STEP number.

**Default value: ENCODER STEP 155**

**Permitted range: ENCODER STEP 147 to 160**

## PARAMETER P12 - MULTIPLE FILM CHECK 24.30

When the MINILOADER is in operation with 24 x 30 CASSETTES and ENCODER STEP PARAMETER P12 is reached, the CAM MOTOR stops for PARAMETER P3 seconds for the MULTIPLE FILM CHECK to be made. Altering this PARAMETER allows the position of the FILM in the MULTIPLE FILM DETECTOR to be controlled precisely. The leading edge of the FILM should be approximately 30 mm into the DETECTOR. If the CHECK is made with the FILM not far enough into the dectector or too far in errors will arise.

For a detailed instruction for setting this PARAMETER, see section *MULTIPLE FILM CHECK* in the SERVICE MANUAL.

Note: Unlike the PARAMETERS P1 to P7 this value is not a time, it is an ENCODER STEP number.

**Default value: ENCODER STEP 148**

**Permitted range: ENCODER STEP 143 to 153**

## PARAMETER P13 - COMPRESSOR VOLTAGE

This PARAMETER controls the voltage to the COMPRESSOR MOTOR M1. The MOTOR is a 24 volt unit and to reduce the noise in the case of customer complaints it is possible to adjust the voltage.

Assuming a nominal voltage of 24 volts (with the MOTOR running) the following are the expected voltages.

IMPORTANT - YOU MUST ENSURE THAT THE VOLTAGE BEING SUPPLIED TO THE COMPRESSOR IS SUFFICIENT TO ENABLE IT TO START WHEN THE INPUT MAINS VOLTAGE TO THE MINILOADER IS AT THE NORMAL MINIMUM VALUE EXPERIENCED AT THE SITE.

0 = 100% 24 volt
1 = 89% 21.3 volt
2 = 82% 19.7 volt
3 = 79% 19.0 volt

**Default value: 0**

**Permitted range: 0 to3**

# SEQUENCE OF OPERATIONS for MINILOADER 2 PLUS LV.

## With 18 x 24 and 24 x 30 Min-R 2 CASSETTES.

Conditions :- Power is on.
A loaded 18 x 24 [24 x 30] MAGAZINE is in position in the MINILOADER.
The GREEN LIGHT is on.
The DISPLAY shows "MINILOADER READY FOR FORMAT 18*24 [24 *30]".

Note - all PHOTOCELL circuits are active when the power is on.

A CASSETTE is pushed into the FEED SLOT until it covers PHOTOCELL FC2. When FC2 is covered -

a. The GREEN LIGHT goes off, and the ORANGE LIGHT turns on.
b. The DISPLAY changes to "MINILOADER IN OPERATION WITH 18*24 [24*30]"
c. The COMPRESSOR MOTOR M1 is energised, the PRESSURE VENT SV5 closes, the two INJECTOR VALVES SV1 & SV2 open to enable the COMPRESSOR to start. After 1 second (fixed in the program) SV1 & SV2 close and the pressure builds up.
d. The CONVEYOR BELT MOTOR M6 starts forwards to carry the CASSETTE to the ENDSTOP where it is detected by PHOTOCELL FC1. If the CASSETTE PATCH is not detected by FC1 within 3 seconds (fixed in program) the CASSETTE is ejected.

When the CASSETTE PATCH is detected by PHOTOCELL FC1 -

a. The CONVEYOR BELT MOTOR M6 stops (the CASSETTE is held in position by the HOLDING ROLLER dropping down behind it).
b. The CAM MOTOR M7 starts forwards.
c. The MAGAZINE VACUUM PUMP MOTOR M3 is energised.

The CAM MOTOR drives the CASSETTE OPENER MECHANISM down to unlatch the CASSETTE. When ENCODER STEP 28 [*STEP 25 for 24 x 30*] is reached the program checks whether PHOTOCELL FC3 is off, signifying the CASSETTE has been opened. If the CASSETTE is not open, the CAM MOTOR reverses to HOME position, and the CASSETTE is ejected.

When ENCODER STEP [PARAMETER P8 for 18 x 24 or PARAMETER P9 for 24 x 30] is reached -

a. The CAM MOTOR M7 stops.
b. The CASSETTE INJECTOR SV1 is energised briefly to attempt to blow the FILM off the CAS SETTE SCREEN. Note, if SWITCH 304 on PCB 303 is turned on, the blow will be repeated 3 times at one second intervals.

A time delay set as PARAMETER P1 (CASSETTE AIR BLOW PAUSE, standard value 1.5 seconds, range 1.5 - 3.5 seconds) then occurs to allow time for the dislodge FILM to drop from the SCREEN.

After the P1 time delay -

a. The CAM MOTOR M7 restarts.
b. The CASSETTE VACUUM PUMP MOTOR M2 is energised.

## With 18 x 24 and 24 x 30 Min-R 2 CASSETTES.

When ENCODER STEP 43 is reached, the program checks to see if PHOTOCELL FC4 has been HIGH showing that there is no film stuck to the SCREEN. If FC4 has been high, the CAM MOTOR continues to run.
If FC4 has not been HIGH, the CAM MOTOR stops and then reverses to ENCODER POSITION 31 and stops. The CASSETTE INJECTOR SV1 is then energised three times at one second intervals (always three times no matter what the setting of SWITCH 304 on PCB 303 is). The PARAMETER P1 DELAY does not re-occur.
The CAM MOTOR starts forward and when ENCODER STEP 43 is reached, the check is repeated. This sequence can be repeated up to 3 times. If the FILM cannot be removed from the SCREEN, the CAM runs in reverse to HOME POSITION and the CASSETTE is ejected. If the FILM is dislodged, the cycle continues.

When ENCODER STEP 94 [*102 for 24 x 30*] is reached -

The MAGAZINE INJECTOR SV2 is energised.

When ENCODER STEP 108 is reached (the two SUCKER BARS are now in contact with the FILMS in the CASSETTE and MAGAZINE). -

a. The CAM MOTOR M7 stops.
b. The program checks PHOTOCELLS FC7 and FC9 for any FILMS in the TUNNELS. If a FILM is detected, a time delay of up to 30 seconds (fixed in program) commences. If the FILM clears the TUNNEL during this delay, a second delay set by PARAMETER P4 (GAP BETWEEN FILMS, set to suit the cycle time of the PROCESSOR, range 0 - 20.0 seconds) occurs. If the FILM does not clear from the TUNNEL, the CAM runs forward to the HOME POSITION and the CASSETTE is ejected.
c. A time delay set by PARAMETER P2 (MAGAZ. FILM SEPARATION BLOW PAUSE, standard value 1.5 seconds, range 1.5 -3.5 seconds) occurs to allow time for the MAGAZINE INJECTOR to separate the FILMS in the MAGAZINE. Note, if SWITCH 303 on PCB 303 is turned on, the long blow of the MAGAZINE INJECTOR is preceded by two extra short blows.

After this delay -

The TILT MOTOR M5 is energised and the MAGAZINE SUCKER BAR is raised, then tilted.

A time delay set by PARAMETER P5 (FILM TILT PAUSE, standard value 2.0 seconds, range 1.5 - 3.5 seconds) occurs to allow time for any extra FILMS picked up by the MAGAZINE SUCKER BAR to fall back into the MAGAZINE.

After this delay -

The CAM MOTOR M7 is restarted.

When ENCODER STEP 135 is reached, the program checks PHOTOCELL FC1 to see if the FILM has been removed from the CASSETTE (or if there is another FILM in the CASSETTE). If the FILM has not been removed from the CASSETTE, the CAM MOTOR M7 stops and the MAGAZINE SUCKERS SOLENOID VALVE SV4 is de-energised to drop the FILM back into the MAGAZINE. The CAM MOTOR then reverses to ENCODER STEP 119 and the TILT MOTOR M5 is reset to zero position to ensure this FILM is pushed back into the MAGAZINE correctly. The CAM then runs forward to HOME POSITION and the CASSETTE is ejected. If the FILM was picked up from the CASSETTE, the CAM MOTOR M7 continues to run.

## With 18 x 24 and 24 x 30 Min-R 2 CASSETTES.

When ENCODER STEP 148 [*155 for 24 x 30*] is reached -

a. The TILT MOTOR M5 is energised to reset the TILT to zero (horizontal) position.
b. When the TILT is reset to zero (MICROSWITCH MS4 energised) the MAGAZINE INJECTOR SOLENOID VALVE SV2 is de-energised.

When ENCODER STEP 155 [*158 for 24 x 30*] is reached -

a. The CAM MOTOR M7 is de-energised.
b. A time delay set by PARAMETER P3 (MULTIPLE FILM LOAD DETECTION PAUSE, stand ard value 0.5 seconds, range 0.3 - 2.8 seconds) occurs to allow time for the FILM to stabilise before the density is read by PHOTOCELL FC8. The cycles continues the whether or not a MULTIPLE FILM LOAD is detected.

After the density of the FILM has been read by PHOTOCELL FC8 -

The CAM MOTOR M7 is energised.

When ENCODER STEP 197 is reached -

a. The CASSETTE SUCKER SOLENOID VALVE SV3 [SV6 for 24 x 30] and the MAGAZINE SUCKER SOLENOID VALVE SV4 are de-energised to drop the FILMS into the CHUTE and CASSETTE respectively.
b. The VACUUM PUMP MOTORS M2 and M3 are de-energised.

When ENCODER STEP 220 is reached -

a. The program checks PHOTOCELL FC1 to ensure a FILM has been loaded into the CASSETTE from the MAGAZINE. The CAM MOTOR M7 continues to run until ENCODER POSITION 255 (HOME POSITION) is reached.
b. The SOFTWARE FILM COUNTERS are incremented by one.

When ENCODER STEP 255 is reached -

a. The COMPRESSOR MOTOR M1 is de-energised.
b. The PRESSURE VENT SOLENOID VALVE SV5 is opened.
c. The CASSETTE CONVEYOR MOTOR M6 is energised in reverse for three seconds (fixed in program), to eject the CASSETTE.

If the CASSETTE is successfully ejected, the message "PLEASE REMOVE CASSETTE" is shown on the DISPLAY.

# SEQUENCE OF OPERATION for MINILOADER 2 PLUS LV

## With 8 x 10 inch Video Film Holders.

Notes : As a different CASSETTE ENDSTOP is used for 8 x 10 inch Video Film Holders, Photocell FC1 cannot be used to detect CASSETTE at ENDSTOP. Instead, PHOTOCELL FC10 is used.

Also as there are no REFLECTIVE PATCHES inside a Video Film Holders, a FILM stuck on the CASSETTE LID cannot be detected by PHOTOCELL FC4 and FILM presence in the CASSETTE (empty, not unloaded or not reloaded) cannot be detected by PHOTOCELL FC1.

In 8 x 10 format, PHOTOCELL FC7 (FILM in top CHUTE or RECEIVING MAGAZINE full) is used to determine whether a FILM was removed from the CASSETTE and fed into the CHUTE. Therefore if the FILM was not removed from the CASSETTE, the new FILM has already been loaded into the CASSETTE before the unload failure can be detected. This is taken care of by different messages to the operator i.e. "FILM NOT PICKED UP FROM CASSETTE, CASSETTE IS LOADED WITH A NEW FILM and CHECK CASSETTE IN DARKROOM".

To determine whether a FILM was loaded into the 8 x 10 CASSETTE, PHOTOCELL FC13 (mounted on the same BRACKET as PHOTOCELL FC8) is used to detect a FILM passing on its way to the CASSETTE.

Conditions :- Power is on .
A loaded 8 x 10 inch MAGAZINE is in position in the MINILOADER.
The GREEN LIGHT is on.
The DISPLAY shows "MINILOADER READY FOR FORMAT 8*10".

Note - all PHOTOCELL circuits are active when the power is on.

A CASSETTE is pushed into the FEED SLOT until it covers PHOTOCELL FC2. When FC2 is covered -

a. The GREEN LIGHT goes off, and the ORANGE LIGHT turns on.
b. The DISPLAY changes to "MINILOADER IN OPERATION WITH 8*10"
c. The COMPRESSOR MOTOR M1 is energised, the PRESSURE VENT SV5 closes, the INJECTOR VALVES SV1 & SV2 open to enable the COMPRESSOR to start. After 1 second (fixed in program) SV1 & SV2 close and the pressure builds up.
d. The CONVEYOR BELT MOTOR M6 starts forwards to carry the CASSETTE to the ENDSTOP where it is detected by PHOTOCELL FC10. If the CASSETTE PATCH is not detected by FC10 within 3 seconds (fixed in program) the CASSETTE is ejected.

When the CASSETTE PATCH is detected by PHOTOCELL FC10 -

a. The CONVEYOR BELT MOTOR M6 stops (the CASSETTE is held in position by the HOLDING ROLLER dropping down behind it).
b. The CAM MOTOR M7 starts forwards.
c. The MAGAZINE VACUUM PUMP MOTOR M3 is energised.

## With 8 x 10 inch Video Film Holders.

The CAM MOTOR drives the CASSETTE OPENER MECHANISM down to unlatch the CASSETTE. When ENCODER STEP 25 is reached the program checks whether PHOTOCELL FC3 is off, signifying the CASSETTE has been opened. If the CASSETTE is not open, the CAM MOTOR reverses to HOME position, and the CASSETTE is ejected.

When ENCODER STEP 30 is reached -

a. The CAM MOTOR M7 stops.
b. The CASSETTE INJECTOR SV1 is energised briefly to attempt to blow the FILM off the CASSETTE SCREEN. Note, if SWITCH 304 on PCB 303 is turned on, the blow will be repeated 3 times at one second intervals. If DIPSWITCH 7 on PCB 301 is on, the pause will still occur, but the INJECTOR will not be actuated.

A time delay set as PARAMETER P1 (CASSETTE AIR BLOW PAUSE, standard value 1.5 seconds, range 1.5 - 3.5 seconds) then occurs to allow time for the dislodged FILM to drop from the SCREEN.

After the P1 time delay -

a. The CAM MOTOR M7 restarts.
b. The CASSETTE VACUUM PUMP MOTOR M2 is energised.

When ENCODER STEP 102 is reached -

The MAGAZINE INJECTOR SV2 is energised.

When ENCODER STEP 108 is reached (the two SUCKER BARS are now in contact with the FILMS in the CASSETTE and MAGAZINE). -

a. The CAM MOTOR M7 stops.
b. The program checks PHOTOCELLS FC7 and FC9 for any FILMS in the TUNNELS. If a FILM is detected, a time delay of up to 30 seconds (fixed in program) commences. If the FILM clears the TUNNEL during this delay, a second delay set by PARAMETER P4 (GAP BETWEEN FILMS, set to suit the cycle time of the PROCESSOR, range 0 - 20.0 seconds) occurs. If the FILM does not clear from the TUNNEL, the CAM runs forward to the HOME POSITION and the CASSETTE is ejected.
c. A time delay set by PARAMETER P2 (MAGAZ. FILM SEPARATION BLOW PAUSE, standard value 1.5 seconds, range 1.5 - 3.5 seconds) occurs to allow the MAGAZINE INJECTOR to separate the FILMS in the MAGAZINE. Note, if SWITCH 303 on PCB 303 is turned on, the long blow of the MAGAZINE INJECTOR is preceded by two extra short blows.

After this delay -

The TILT MOTOR M5 is energised and the MAGAZINE SUCKER BAR is raised then tilted.

## With 8 x 10 inch Video Film Holders.

A time delay set by PARAMETER P5 (FILM TILT PAUSE, standard value 2.0 seconds, range 1.5 - 3.5 seconds) occurs to allow time for any extra FILMS picked up by the MAGAZINE SUCKER BAR to fall back into the MAGAZINE.

After this delay -

The CAM MOTOR M7 is restarted.

When ENCODER STEP 155 is reached -

a. The TILT MOTOR M5 is energised to reset the TILT to zero (horizontal) position.
b. When the TILT is reset to zero (MICROSWITCH MS4 energised) the MAGAZINE INJECTOR SOLENOID VALVE SV2 is de-energised.

When ENCODER STEP 158 is reached -

a. The CAM MOTOR M7 is de-energised.
b. A time delay set by PARAMETER P3 (MULTIPLE FILM LOAD DETECTION PAUSE, standard value 0.5 seconds, range 0.3 - 2.8 seconds) occurs to allow time for the FILM to stabilise before the density is read by PHOTOCELL FC8. The cycles continues the whether or not a MULTIPLE FILM LOAD is detected.
c. PHOTOCELL FC13 checks if a FILM has been picked up by the MAGAZINE SUCKER BAR.

After the density of the FILM has been read by PHOTOCELL FC8 -

The CAM MOTOR M7 is energised.

When ENCODER STEP 197 is reached -

a. The CASSETTE SUCKER SOLENOID VALVE SV3 and the MAGAZINE SUCKER SOLENOID VALVE SV4 are de-energised to drop the FILMS into the CHUTE and CASSETTE respectively.
b. The VACUUM PUMP MOTORS M2 and M3 are de-energised.

When ENCODER STEP 220 is reached -

The program checks that PHOTOCELL FC7 went low to ensure a FILM has been removed from the CASSETTE and fed into the TUNNEL.

The CAM MOTOR M7 continues to run until ENCODER POSITION 255 (HOME POSITION) is reached.

When ENCODER STEP 255 is reached -

a. The COMPRESSOR MOTOR M1 is de-energised.
b. The PRESSURE VENT SOLENOID VALVE SV5 is opened.
c. The CASSETTE CONVEYOR MOTOR M6 is energised in reverse for three seconds (fixed in program), to eject the CASSETTE.

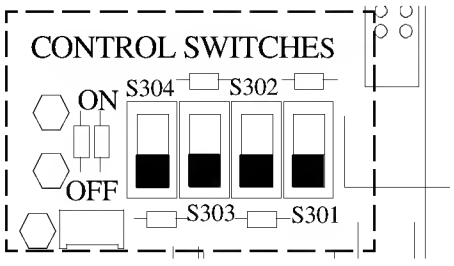
If the CASSETTE is successfully ejected, the message "PLEASE REMOVE CASSETTE" is shown on the DISPLAY.

# CONTROL SWITCH SETTINGS ON PCB 303

| | |
|---|---|
| SWITCH 304 OFF | ONE BLOW IN THE CASSETTE |
| SWITCH 304 ON (UP) | THREE BLOWS IN THE CASSETTE<br>NOTE - SLOWS CYCLE BY 2 SEC. |

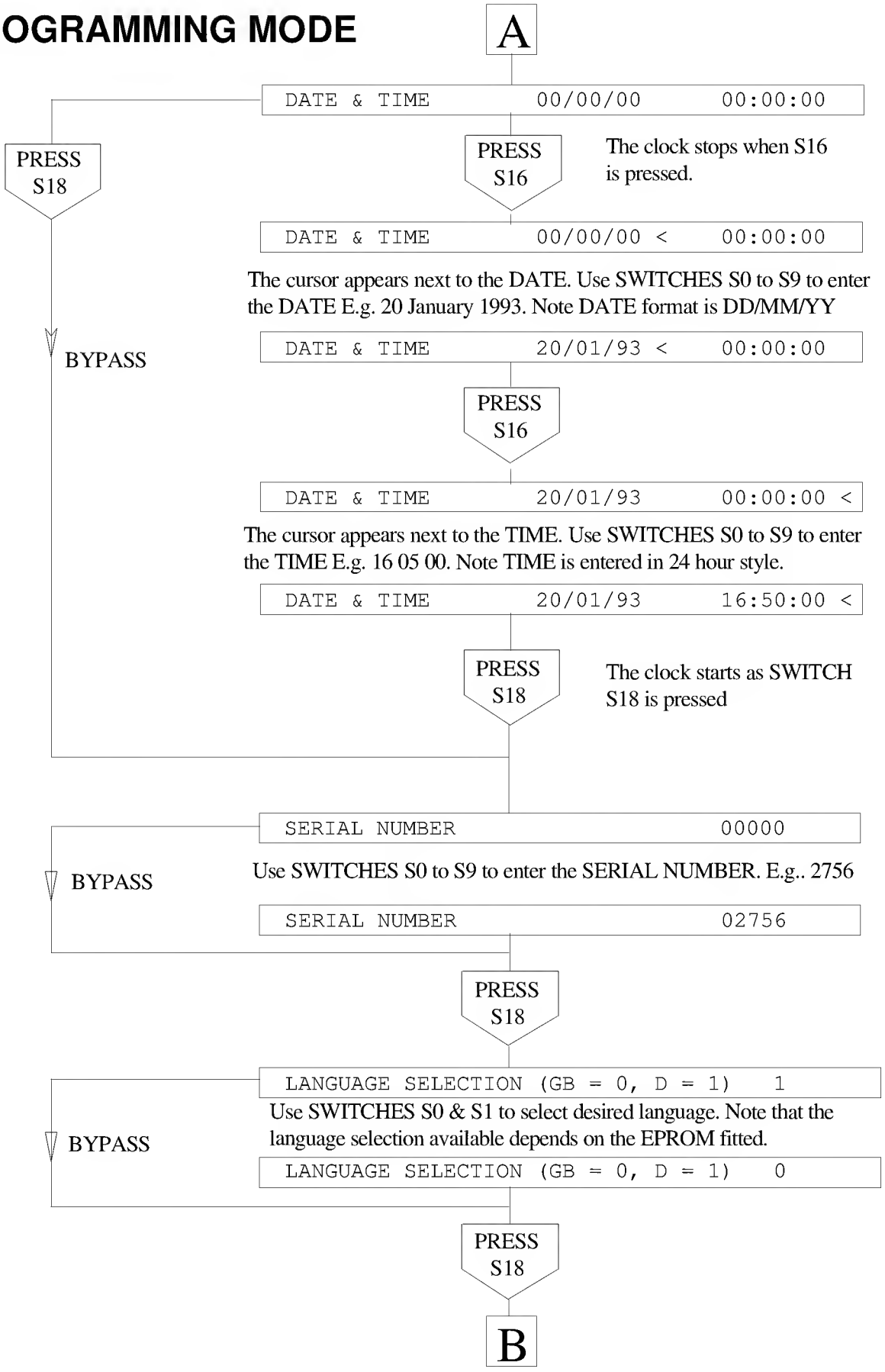
| | |
|---|---|
| SWITCH 303 OFF | ONE BLOW IN THE MAGAZINE |
| SWITCH 303 ON (UP) | THREE BLOWS IN THE MAGAZINE<br>NOTE - SLOWS CYCLE BY 2 SEC. |

| | | |
|---|---|---|
| SWITCH 301 ON (UP)<br>and<br>SWITCH 302 OFF | PROGRAMMING MODE<br>(SEE TG - 15) | A |
| SWITCH 301 OFF<br>and<br>SWITCH 302 ON (UP) | TEST MODE<br>(SEE TG - 18) | C |
| SWITCH 301 ON (UP)<br>and<br>SWITCH 302 ON (UP) | STATISTICS<br>USING A:-<br>PRINTER (TG - 19)<br>PC. (TG - 21) | D |

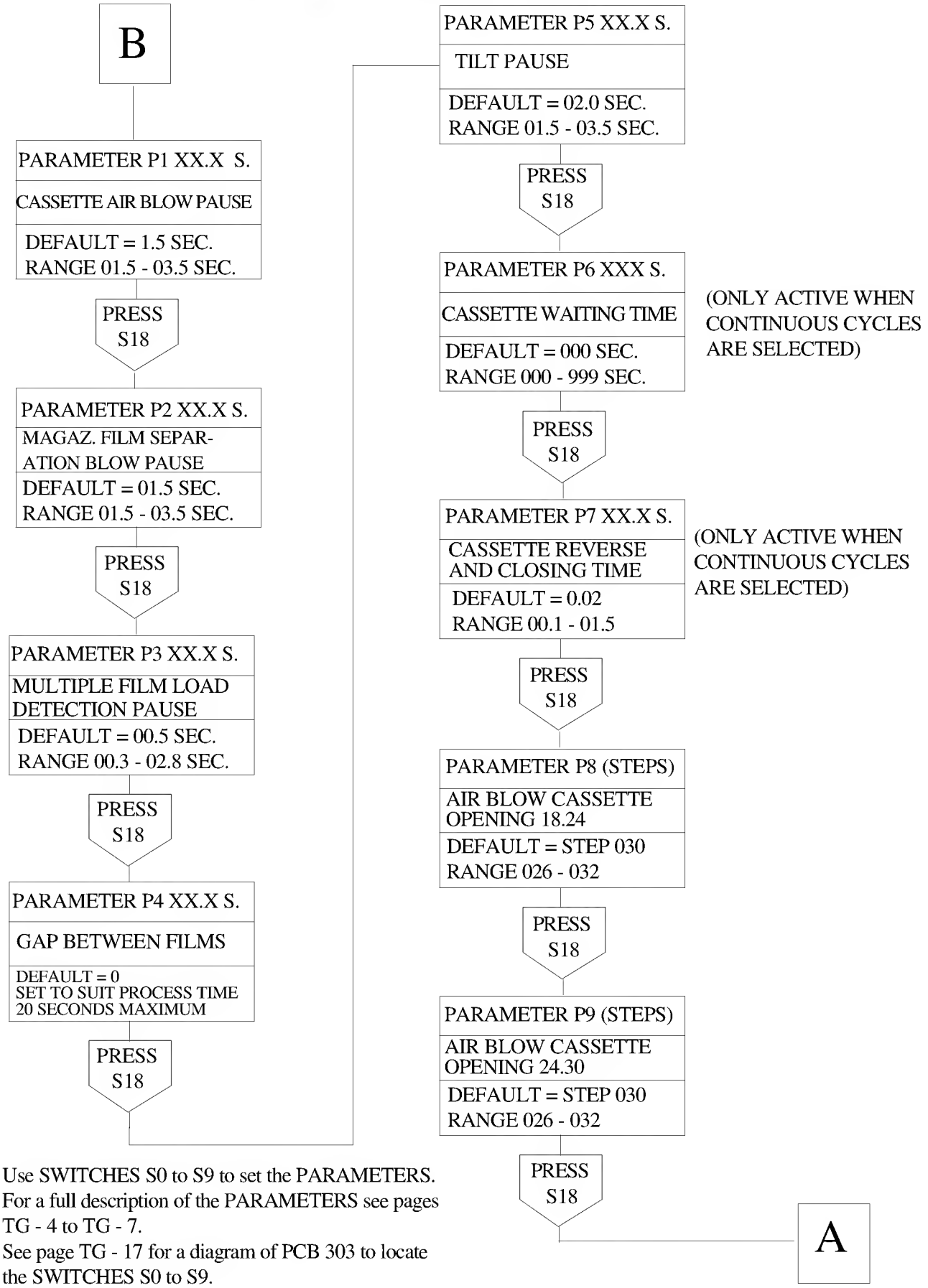



**CONTROL SWITCHES ON PCB 303**

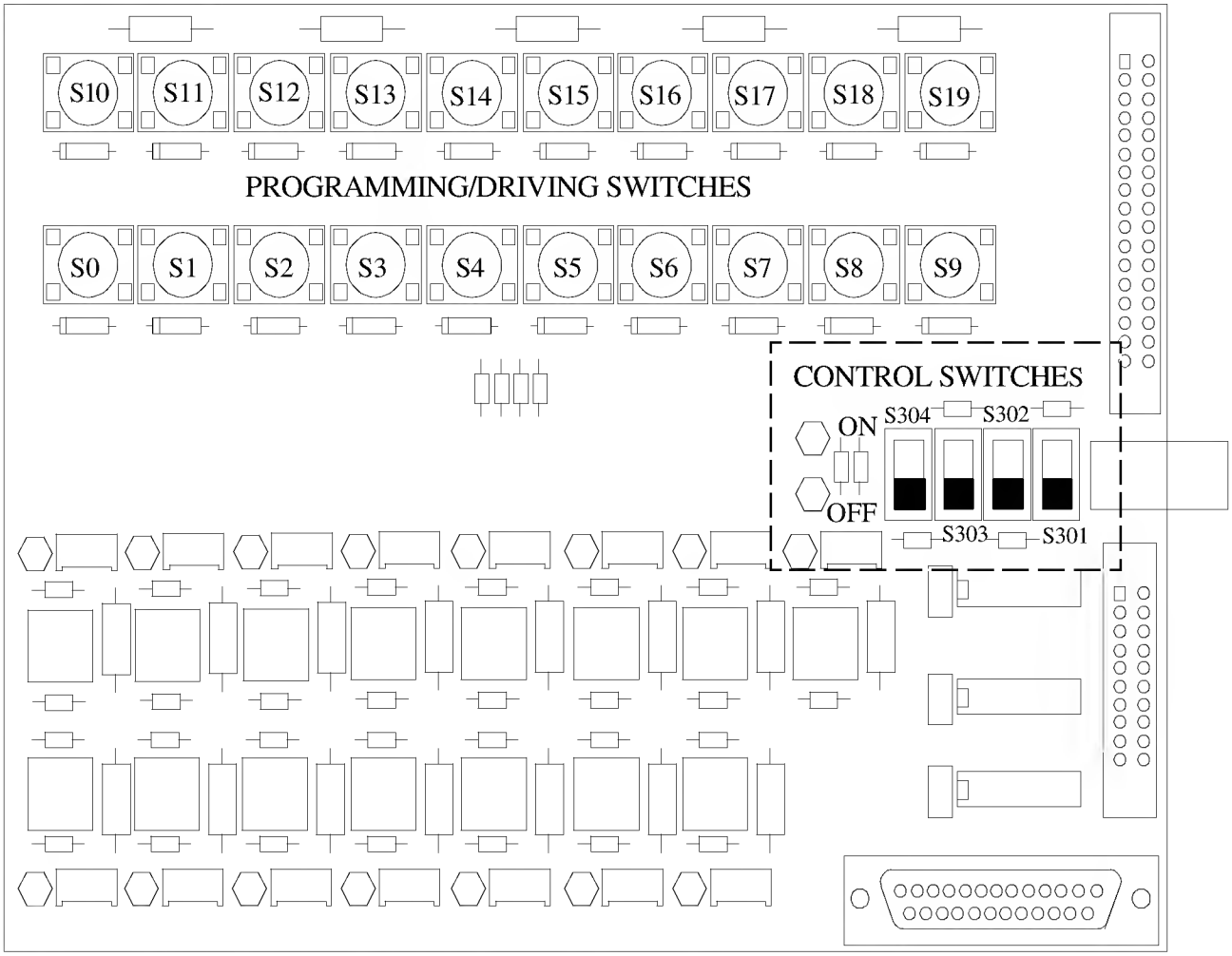
# PROGRAMMING MODE


A
DATE & TIME 00/00/00 00:00:00
PRESS S18
PRESS S16
The clock stops when S16 is pressed.
DATE & TIME 00/00/00 < 00:00:00
The cursor appears next to the DATE. Use SWITCHES S0 to S9 to enter the DATE E.g. 20 January 1993. Note DATE format is DD/MM/YY
BYPASS
DATE & TIME 20/01/93 < 00:00:00
PRESS S16
DATE & TIME 20/01/93 00:00:00 <
The cursor appears next to the TIME. Use SWITCHES S0 to S9 to enter the TIME E.g. 16 05 00. Note TIME is entered in 24 hour style.
DATE & TIME 20/01/93 16:50:00 <
PRESS S18
The clock starts as SWITCH S18 is pressed
SERIAL NUMBER 00000
BYPASS
Use SWITCHES S0 to S9 to enter the SERIAL NUMBER. E.g.. 2756
SERIAL NUMBER 02756
PRESS S18
LANGUAGE SELECTION (GB = 0, D = 1) 1
Use SWITCHES S0 & S1 to select desired language. Note that the language selection available depends on the EPROM fitted.
BYPASS
LANGUAGE SELECTION (GB = 0, D = 1) 0
PRESS S18
B

# PARAMETER SETTING



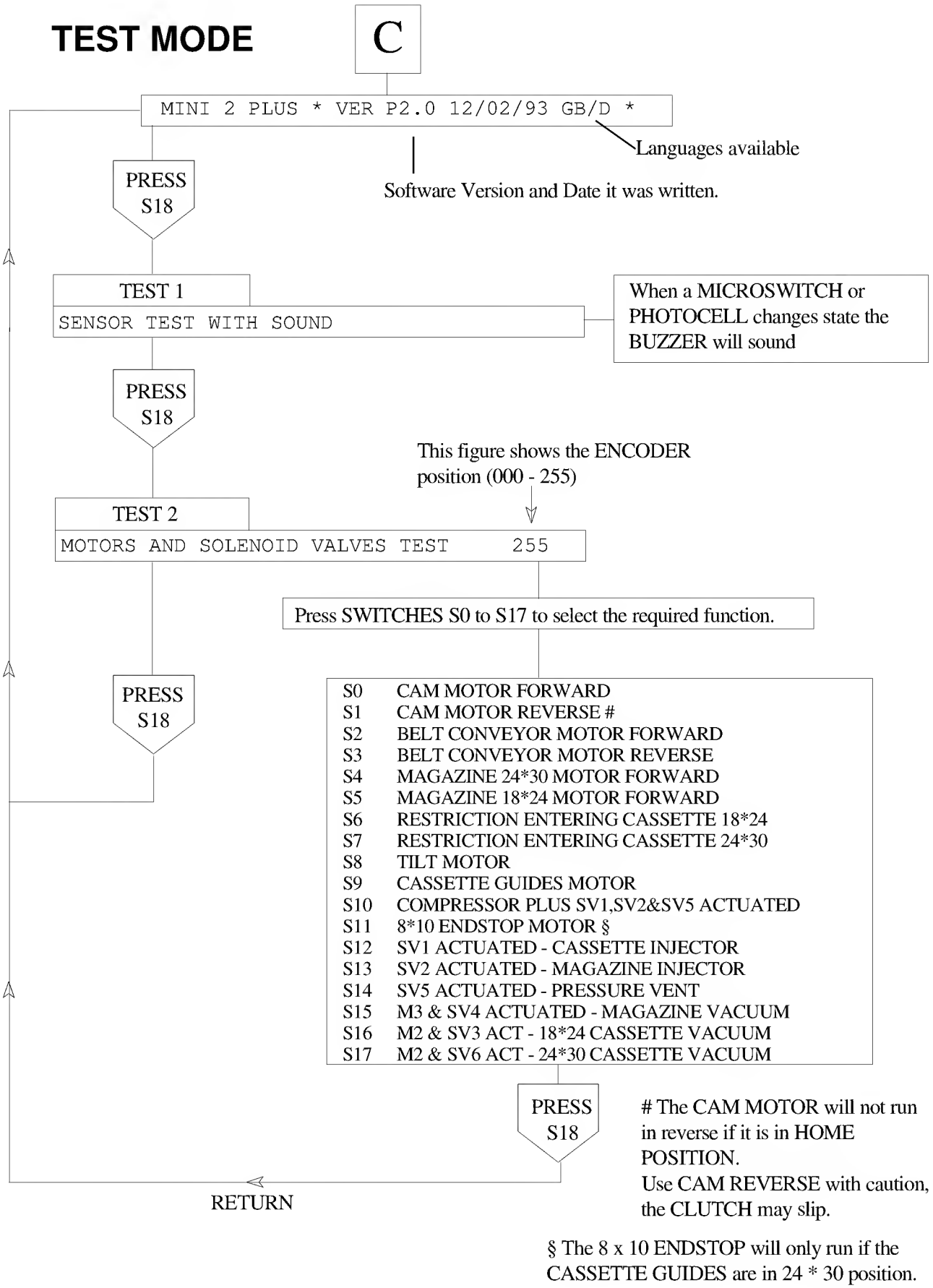

Use SWITCHES S0 to S9 to set the PARAMETERS.
For a full description of the PARAMETERS see pages TG - 4 to TG - 7.
See page TG - 17 for a diagram of PCB 303 to locate the SWITCHES S0 to S9.




**PCB 303**

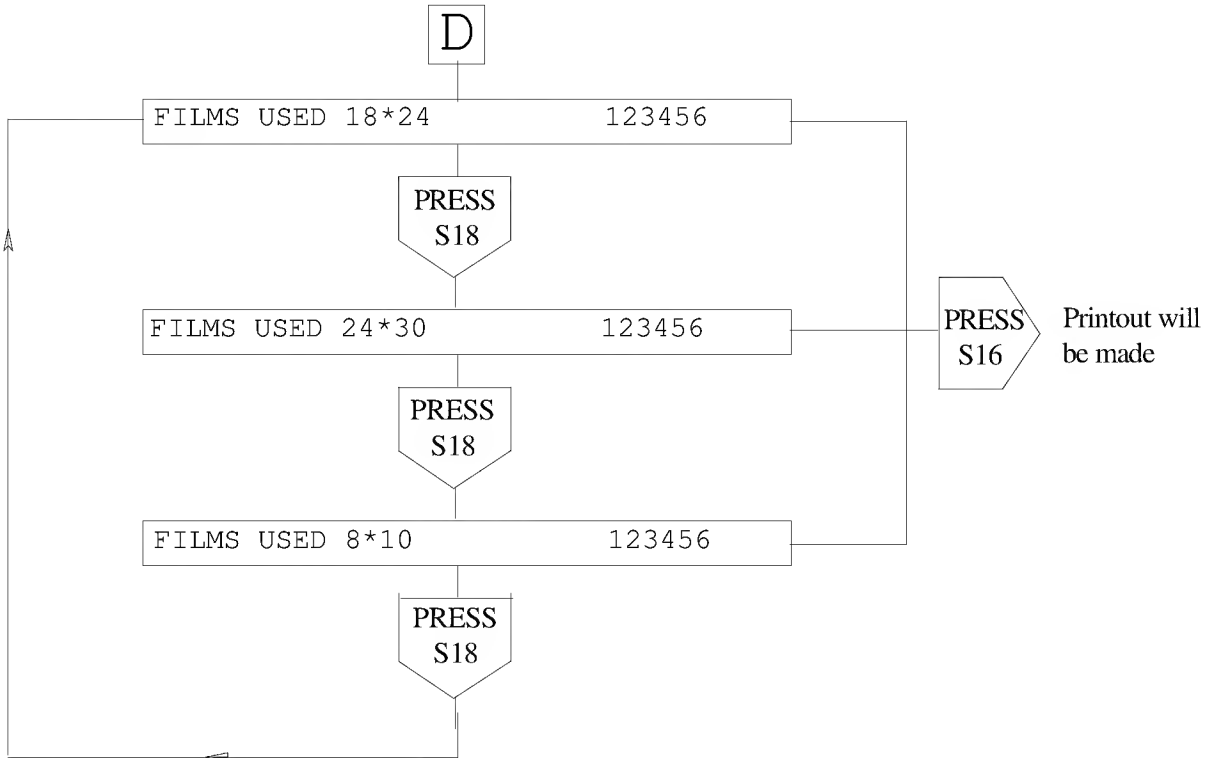
The functions of the CONTROL SWITCHES are described on page TG - 14.

The PROGRAMMING/DRIVING SWITCHES are used to enter information and PARAMETERS (see page TG - 15 & 16), in TEST MODE to drive the MOTORS and SOLENOIDS (see page TG -18), and also in STATISTICS MODE to obtain a PRINTOUT and zero the statistics (see page TG - 19)

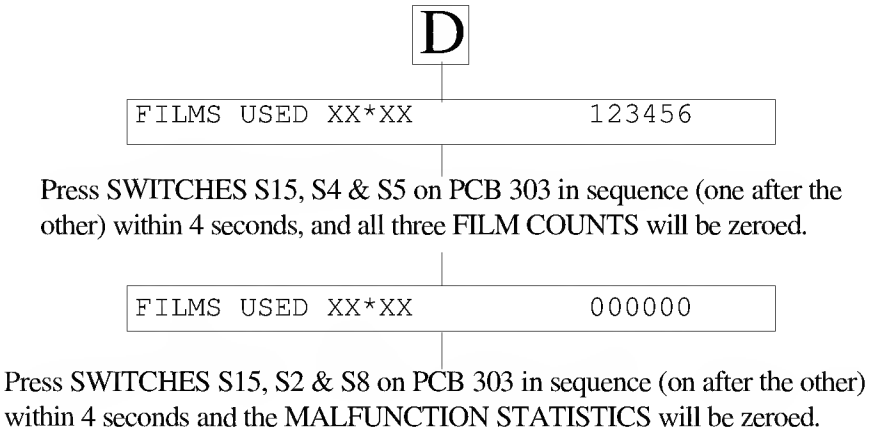

TEST MODE
C
MINI 2 PLUS * VER P2.0 12/02/93 GB/D *
Languages available
Software Version and Date it was written.
PRESS S18
TEST 1
SENSOR TEST WITH SOUND
When a MICROSWITCH or PHOTOCELL changes state the BUZZER will sound
PRESS S18
This figure shows the ENCODER position (000 - 255)
TEST 2
MOTORS AND SOLENOID VALVES TEST 255
Press SWITCHES S0 to S17 to select the required function.
PRESS S18
S0 CAM MOTOR FORWARD
S1 CAM MOTOR REVERSE #
S2 BELT CONVEYOR MOTOR FORWARD
S3 BELT CONVEYOR MOTOR REVERSE
S4 MAGAZINE 24*30 MOTOR FORWARD
S5 MAGAZINE 18*24 MOTOR FORWARD
S6 RESTRICTION ENTERING CASSETTE 18*24
S7 RESTRICTION ENTERING CASSETTE 24*30
S8 TILT MOTOR
S9 CASSETTE GUIDES MOTOR
S10 COMPRESSOR PLUS SV1,SV2&SV5 ACTUATED
S11 8*10 ENDSTOP MOTOR §
S12 SV1 ACTUATED - CASSETTE INJECTOR
S13 SV2 ACTUATED - MAGAZINE INJECTOR
S14 SV5 ACTUATED - PRESSURE VENT
S15 M3 & SV4 ACTUATED - MAGAZINE VACUUM
S16 M2 & SV3 ACT - 18*24 CASSETTE VACUUM
S17 M2 & SV6 ACT - 24*30 CASSETTE VACUUM
PRESS S18
# The CAM MOTOR will not run in reverse if it is in HOME POSITION.
Use CAM REVERSE with caution, the CLUTCH may slip.
§ The 8 x 10 ENDSTOP will only run if the CASSETTE GUIDES are in 24 * 30 position.
RETURN

## MAKING A PRINTOUT OF FILM USE AND MALFUNCTION STATISTICS

Connect a serial PRINTER to the 25 PIN SOCKET on PCB 303. Use a CABLE part number 29030814. See page TG - 20 for PRINTER settings.




## ZEROING FILM COUNTS AND MALFUNCTION STATISTICS


D
FILMS USED XX*XX 123456
Press SWITCHES S15, S4 & S5 on PCB 303 in sequence (one after the other) within 4 seconds, and all three FILM COUNTS will be zeroed.
FILMS USED XX*XX 000000
Press SWITCHES S15, S2 & S8 on PCB 303 in sequence (on after the other) within 4 seconds and the MALFUNCTION STATISTICS will be zeroed.

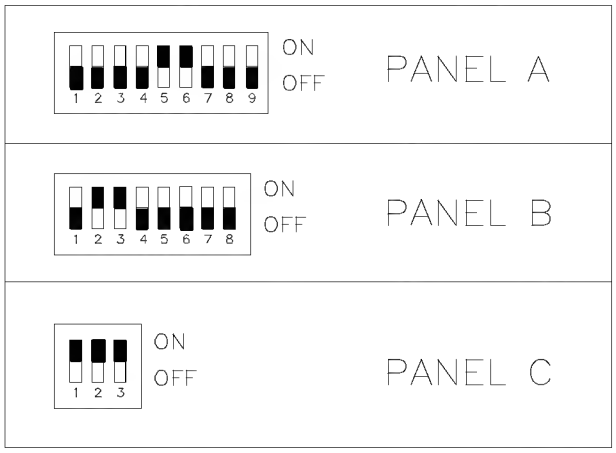
*IMPORTANT, make another printout to check the MALFUNCTION STATISTICS have been zeroed. If necessary, repeat the operation.*

# SETUP OF SERIAL PRINTERS

## KODAK DICONIX 150 PLUS

For Kodak DICONIX 150 PLUS printer, set the printer dipswitches as shown.

If these settings are used, the printer will operate with MULTILOADER 2, MINILOADER 1M, 2 and 2 PLUS.




## KODAK DICONIX 180 Si.

For the Kodak DICONIX 180 Si printer set the configuration as shown below.

If these settings are used, the printer will operate with MULTILOADER 2, MINILOADER 1M, 2 and 2 PLUS.

New Printer Settings

| | | | |
|---|---|---|---|
| (1) | Emulation | = | EPSON FX-85 |
| (2) | Page Length | Not important | |
| (3) | Perforation Skip | = | Off |
| (4) | Character Set | = | UK *or USA* |
| (5) | Character Default | Not important | |
| (6) | Carriage Return | = | CR |
| (7) | Line Feed | = | LF+CR |
| (8) | Graphic Print Dir | Not important | |
| (9) | LF/Graphic/Pitch Mode | = | Normal |
| (10) | Protocol | = | RDY/BSY |
| (11) | Parity | = | None |
| (12) | Data Length | = | 7 bits |
| (130 | Baud Rates (Stop Bits) | = | 1200(1) |

## OTHER SERIAL PRINTERS

Consult your printer manual and set up the printer as follows:-

Carriage Return only.
Epson compatibility.
Character set - English or US.
Baud rate - 1200.
Data length - 7 bit.
No parity.
Protocol - RDY/BSY.
Carrier detect - Ignored.
Data Set Ready - Ignored.
Clear to Send - Ignored.

# STATISTICS USING A PC.

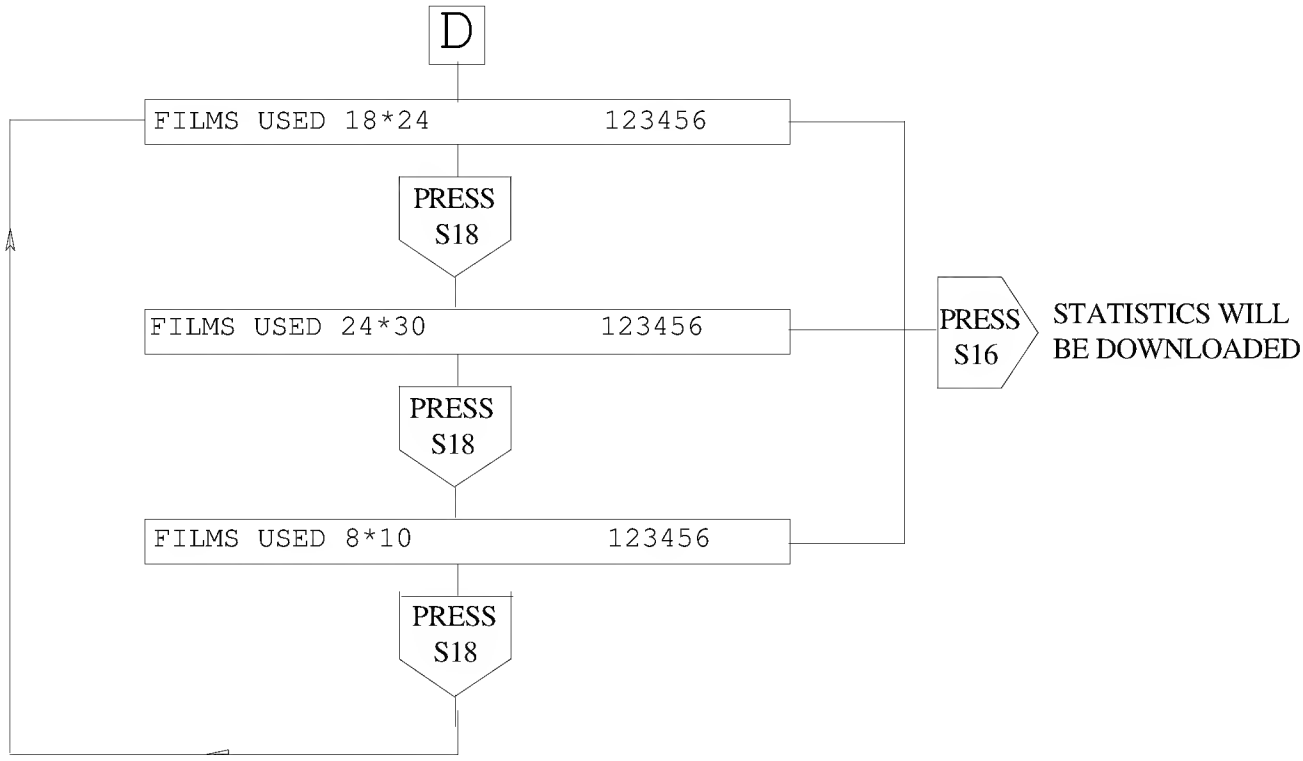
If a copy of PC-PLUS is available, it is possible to download the MALFUNCTION STATISTICS to a PC. A 25 PIN MALE to 9 PIN FEMALE lead is required, with PIN CONNECTIONS as detailed below.

| | PIN NUMBER CONNECTIONS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 9 PIN FEMALE (PC) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 25 PIN MALE (MINILOADER) | N/C | 3 | 2 | 20 | 7 | 6 | 4 | 5 | N/C |

The communication settings for PROCOM are as follows:-

```
      BAUD:  1200
    PARITY:  EVEN
 DATA BITS:  7
 STOP BITS:  1
    DUPLEX:  FULL
      PORT:  COM1
  PROTOCOL:  ASCII
  TERMINAL:  VT100
      MODE:  DIRECT
```

Connect the PC to the MINILOADER, set PROCOM ready to receive and send the STATISTICS as shown below. The FILE can then be saved to your HARD DISK or a FLOPPY.



# SAMPLE PRINTOUT.

| | |
|---|---|
| * ESR STATUS REPORT 14/11/92 16:41 * | The day and time the printout was made. |
| *MINI 2 PLUS * Ver. P1.4 16/10/92 GB/D | The version of software fitted, and the date it was produced. |
| SERIAL NUMBER : 2635 | The serial number of the MINILOADER. |
| - FILM COUNT LAST ZEROED : 20/10/92 | The date the film counts were last zeroed. |
| FILMS USED 18*24 001478 | Number of films of each size used since the film counts were last zeroed. |
| FILMS USED 24*30 000137 | |
| FILMS USED 8*10 000065 | |
| - MALFUNCT. STATISTICS ZEROED : 20/10/92 | The date the malfunction statistics were last zeroed. |
| CASSETTE POSITION MALFUNCTION 000012 | See message number 37 |
| CASSETTE DID NOT OPEN 000004 | See message number 29 |
| CASSETTE NOT UNLOADED 000015 | See message number 38 |
| CASSETTE NOT RELOADED 000006 | See message number 31 |
| FILM JAMMED IN CHUTE 000002 | See message number 30 |
| MULTIPLE FILM LOAD 000007 | See message number 36 |
| SUPPLY MAGAZINE WAS OPEN 000001 | See message number 41 |
| RECEIVING MAGAZINE WAS OPEN 000002 | See message number 33 |
| CASSETTE FAILED TO EJECT 000006 | See message number 42 |
| CAM SYSTEM MALFUNCTION *22* 000001 | See message number 22 |
| TILT SYSTEM MALFUNCTION *23* 000005 | See message number 23 |
| CASSETTE GUIDES MALFUNCTION *24* 000003 | See message number 24 |
| MAGAZINE CARRIAGE MALFUNCTION *25* 000003 | See message number 25 |
| CASSETTE FAILED TO EJECT *73* 000004 | See message number 26 |
| 8*10 ENDSTOP MALFUNCTION *75* 000007 | See message number 27 |
| BELT SYSTEM MALFUNCTION *65* 000001 | See message number 28 |

For a full description of these MALFUNCTION STATISTICS, consult the message number shown.

# NORMAL OPERATION MESSAGES.

| | |
|---|---|
| See message number 1 | PLEASE WAIT - RESET OPERATING |
| See message number 2 | MINILOADER READY FOR FORMAT XX*XX |
| See message number 3 | MINILOADER IN OPERATION WITH XX*XX |
| See message number 4 | PLEASE REMOVE CASSETTE |
| See message number 5 | UNLOAD ONLY MODE XX*XX |
| See message number 6 | LOAD ONLY MODE XX*XX |
| See message number 7 | SERIAL UNLOADING XX*XX |
| See message number 8 | END OF SERIAL UNLOADING XX*XX |
| See message number 9 | PLEASE WAIT |
| See message number 10 | SERIAL UNLOADING INTERRUPTED |
| See message number 11 | READY FOR EMERGENCY CASSETTE XX*XX |
| See message number 12 | SUPPLY MAGAZINE XX*XX NEARLY EMPTY |
| See message number 13 | SUPPLY MAGAZINE XX*XX EMPTY |
| See message number 14 | SUPPLY MAGAZINE 18*24 IN RELOAD POSITION |
| See message number 15 | CASSETTE XX*XX WAS NOT EMPTY |
| See message number 16 | PLEASE PRESS CASSETTE EJECT BUTTON |
| See message number 17 | FILMS USED XX*XX |
| See message number 18 | RECEIVING MAGAZINE IS FULL |
| See message number 19 | CHANGING FORMAT |
| See message number 20 | CASSETTE WAS EMPTY |
| See message number 21 | CASSETTE IS EMPTY |

These are MESSAGES that appear on the DISPLAY during normal operation of the MINILOADER.

For fuller description of the message, consult the message number shown.

# ERROR AND PROBLEM MESSAGES.

| | |
|---|---|
| See message number 22 | PLEASE CALL FOR SERVICE-ERROR CODE *22* |
| See message number 23 | PLEASE CALL FOR SERVICE-ERROR CODE *23* |
| See message number 24 | PLEASE CALL FOR SERVICE-ERROR CODE *24* |
| See message number 25 | PLEASE CALL FOR SERVICE-ERROR CODE *25* |
| See message number 26 | PLEASE CALL FOR SERVICE-ERROR CODE *65* |
| See message number 27 | PLEASE CALL FOR SERVICE-ERROR CODE *73* |
| See message number 28 | PLEASE CALL FOR SERVICE-ERROR CODE *75* |
| See message number 29 | CASSETTE DID NOT OPEN |
| See message number 30 | FILM JAMMED IN CHUTE |
| See message number 31 | CASSETTE IS NOT LOADED |
| See message number 32 | RECEIVING MAGAZ. NOT IN CORRECT POSITION |
| See message number 33 | RECEIVING MAGAZINE IS OPEN |
| See message number 34 | ATTENTION - WRONG RECEIVING MAGAZINE |
| See message number 35 | SUPPLY MAGAZINE XX*XX NOT IN CORR. POSN. |
| See message number 36 | MULTIPLE FILM LOAD |
| See message number 37 | PLEASE ENTER CASSETTE CORRECTLY / CASSETTE POSITION MALFUNCTION |
| See message number 38 | FILM NOT PICKED UP FROM CASSETTE |
| See message number 39 | ATTENTION - WRONG MAGAZINE |
| See message number 40 | ATTENTION - WRONG CASSETTE |
| See message number 41 | SUPPLY MAGAZINE IS OPEN |
| See message number 42 | CASSETTE FAILED TO EJECT |
| See message number 43 | FILM STUCK TO SCREEN / CHECK CASSETTE IN DARKROOM / ORIGINAL FILM IN CASSETTE |
| See message number 44 | CASSETTE IS LOADED WITH A NEW FILM / CHECK CASSETTE IN DARKROOM |

These are ERROR/ PROBLEM MESSAGES that appear on the DISPLAY of the MINILOADER.

For fuller description of the message, consult the message number shown.

# EXPLANATION OF MESSAGES.

1 **PLEASE WAIT - RESET OPERATING**

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

The MINILOADER is resetting to their respective home positions the TILT SYSTEM, the CAM SYSTEM and the MAGAZINE CARRIAGE. If the reset is not successful within a fixed time, an error message will appear. The ORANGE LIGHT will be on.

This message normally appears when the machine is first switched on. It can also appear if an error has been detected by the program. When the reset is successfully completed the GREEN LIGHT will come on, and the message will change to "MINILOADER READY FOR FORMAT XX*XX". (Depending on what size the MINILOADER was last operated in).

If the message remains on the DISPLAY for more than 20 seconds, a SOFTWARE FREEZE has occurred, and it will be necessary to reset the MICROPROCESSOR by switching the power off for about 10 seconds.

2 **MINILOADER READY FOR FORMAT 18*24**
**MINILOADER READY FOR FORMAT 24*30**
**MINILOADER READY FOR FORMAT 8*10**

These are customer messages that appear on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

The MINILOADER is ready to accept either an 18 x 24 or 24 x 30 cm MAMMOGRAPHY CASSETTE, or an 8*10 inch VIDEO CASSETTE for a normal (unload and reload) cycle. The GREEN LIGHT will be on.
When a CASSETTE is entered, the ORANGE LIGHT comes on, and the message changes to "MINILOADER IN OPERATION WITH XX*XX"

3 **MINILOADER IN OPERATION WITH 18*24**
**MINILOADER IN OPERATION WITH 24*30**
**MINILOADER IN OPERATION WITH 8*10**

These are customer messages that appear on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

An 18 x 24 or 24 x 30 cm MAMMOGRAPHY CASSETTE, or an 8*10 inch VIDEO CASSETTE has been entered for a normal (unload and reload) cycle. The ORANGE LIGHT will be on.

4 **PLEASE REMOVE CASSETTE**

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

This message appears at the end of every cycle if the CASSETTE is left in the ENTRANCE SLOT. The ORANGE LIGHT will be on. After the CASSETTE is removed, the GREEN LIGHT will come on, and the message "MINILOADER READY" will appear, unless a fault condition exits.

If there is no CASSETTE in the ENTRANCE SLOT, check that PHOTOCELL FC" is operating correctly.

5 **UNLOAD ONLY MODE 18*24**
**UNLOAD ONLY MODE 24*30**
**UNLOAD ONLY MODE 8*10**

These are customer messages that appear on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

Operation UNLOAD ONLY, (remove the FILM from the CASSETTE, but do not reload it), was selected by pressing the left hand BUTTON once on the CUSTOMER KEYPAD. This message will then replace the "MINILOADER READY FOR FORMAT XX*XX" message. Note that the desired CASSETTE size must be selected before UNLOAD ONLY. The GREEN LIGHT will be on.

UNLOAD ONLY can also be used if the MAGAZINE for the desired size is not available.

After the CASSETTE is entered, the ORANGE LIGHT will come on, but the message will remain on the DISPLAY.

When the CASSETTE is removed from the MINILOADER after an UNLOAD ONLY cycle, the RED LIGHT will come on, the BUZZER will sound, and the message "CASSETTE IS EMPTY" will appear on the display.

6 **LOAD ONLY MODE 18*24**
**LOAD ONLY MODE 24*30**
**LOAD ONLY MODE 8*10**

These are customer messages that appear on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

Operation LOAD ONLY, (load a FILM into an empty CASSETTE) was selected by pressing the left land BUTTON on the CUSTOMER KEYPAD twice. This message will then replace the "MINILOADER READY FOR FORMAT XX*XX" message. Note that the desired CASSETTE size must be selected before LOAD ONLY. The GREEN LIGHT will be on.

After the CASSETTE is entered, the ORANGE LIGHT will come on, but the message will remain on the DISPLAY.

If a loaded CASSETTE was entered, after the cycle the message "CASSETTE WAS NOT EMPTY" will be displayed.

7 **SERIAL UNLOADING 18*24 000**
**SERIAL UNLOADING 24*30 000**

These are customer messages that only appear on PROCESSOR INTERFACE versions of the MINILOADER.

**IMPORTANT**:- SERIAL UNLOADING is only possible for MAMMOGRAPHY CASSETTES.

Operation SERIAL UNLOADING (sequential feeding of pre-exposed FILMS from the MAGAZINE to the CASSETTE and then into the PROCESSOR) has been selected by pressing the SERIAL UNLOAD BUTTON on the CUSTOMER KEYPAD. Note that the correct CASSETTE size must be selected before pressing SERIAL UNLOADING, and that a SERIAL CODED magazine of the correct size must be present in the MINILOADER. If a SERIAL MAGAZINE is not installed, the message "ATTENTION - WRONG MAGAZINE" will be displayed. The GREEN LIGHT will be on.

When a MAMMOGRAPHY CASSETTE (loaded or empty) of the correct size is entered, the ORANGE LIGHT will come on, and the numbers on the right of the DISPLAY will show the count of FILMS removed from the appropriate SERIAL MAGAZINE.

8 **END OF SERIAL UNLOADING 18*24 000**
**END OF SERIAL UNLOADING 24*30 000**

This is a customer message that only appears on PROCESSOR INTERFACE versions of the MINILOADER.

The operation SERIAL UNLOADING has been completed and the SERIAL MAGAZINE is now empty. The numbers on the right of the DISPLAY will show how many FILMS have been fed to the PROCESSOR from the MAGAZINE. The CASSETTE is ejected. A warning will be given that the CASSETTE is empty.

9 **PLEASE WAIT**

This is a customer message that only appears on PROCESSOR INTERFACE version of the MINILOADER..

The MINILOADER was in SERIAL MODE, and the RESET button on the CUSTOMER KEYPAD has been pressed. This is the normal way to halt the SERIAL MODE, if an EMERGENCY CASSETTE is to be entered.

The MINILOADER will continue to run until the last film removed from the SERIAL MAGAZINE before the RESET button was pressed has been fed into the PROCESSOR. This ensures that SERIAL FILMS are never sent out in a CASSETTE.

10 **SERIAL UNLOADING INTERRUPTED**

This is a customer message that only appears on PROCESSOR INTERFACE versions of the MINILOADER.

The SERIAL MODE was halted by pressing the RESET BUTTON on the CUSTOMER KEYPAD. The empty CASSETTE is returned, with a message "CASSETTE IS EMPTY". The RED LIGHT is on and the BUZZER sounds. When RESET is pressed twice to clear this message, (the first press stops the BUZZER, and the second press clears the message), the message "SERIAL UNLOADING INTERRUPTED" will appear on the DISPLAY. Press RESET again to obtain the message "READY FOR EMERGENCY CASSETTE".

Note; once SERIAL UNLOADING is commenced, it can only be finally terminated by switching off the MINILOADER (or opening the MAGAZINE DOOR). This is a safety feature to protect SERIAL FILMS.

11 **READY FOR EMERGENCY CASSETTE 18*24**
**READY FOR EMERGENCY CASSETTE 24*30**
**READY FOR EMERGENCY CASSETTE 8*10**

These are customer messages that only appear on PROCESSOR INTERFACE versions of the MINILOADER.

The SERIAL MODE has been interrupted, and the Miniloader in now ready to accept an EMERGENCY CASSETTE. The GREEN LIGHT will be on. The size displayed is the same size as the SERIAL MODE that has just been interrupted. If necessary the size can be changed for a different sized CASSETTE. Press the SIZE CHANGE BUTTON on the CUSTOMER KEYPAD as normal. If there is a NON-SERIAL MAGAZINE present for the new selected size a normal (unload/load) cycle will be carried out, otherwise an UNLOAD ONLY cycle will occur, and when the CASSETTE is returned a warning will be given that the "CASSETTE IS EMPTY".

After the cycle the MINILOADER will again display the message "READY FOR EMERGENCY CASSETTE". Another EMERGENCY CASSETTE can be entered, changing the size if necessary, or SERIAL MODE can be recommenced by pressing the SERIAL BUTTON on the CUSTOMER KEYPAD.
**IMPORTANT The correct size for the SERIAL MAGAZINE must be selected first.**

Note:- If the MAGAZINE DOOR is opened to fit another MAGAZINE, the count for the SERIAL MODE that was interrupted will be lost.

12 **SUPPLY MAGAZINE 18*24 NEARLY EMPTY**
**SUPPLY MAGAZINE 24*30 NEARLY EMPTY**
**SUPPLY MAGAZINE 8*10 NEARLY EMPTY**

These are customer messages that appear on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

The SUPPLY MAGAZINE of the size displayed has less than 10 FILMS remaining. The ORANGE LIGHT will flash. When the SUPPLY MAGAZINE is nearly empty, it will automatically be sent forward to the RELOAD position at the end of the cycle.

13 **SUPPLY MAGAZINE 18*24 EMPTY**

**SUPPLY MAGAZINE 24*30 EMPTY**
**SUPPLY MAGAZINE 8*10 EMPTY**

These are customer messages that appear on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

The SUPPLY MAGAZINE of the size displayed is empty. The RED LIGHT will be on, and the BUZZER will sound. When the SUPPLY MAGAZINE is empty, it will automatically be sent forward to the RELOAD position at the end of the cycle.

14 **SUPPLY MAGAZINE 18*24 IN RELOAD POSITION**

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

The BUTTON on the CUSTOMER KEYPAD which brings the 18*24 MAGAZINE forward to the reload position has been pressed. This message will alternate with "MINILOADER READY FOR FORMAT XX*XX", and the GREEN LIGHT will be on

15 **CASSETTE 18*24 WAS NOT EMPTY**
**CASSETTE 24*30 WAS NOT EMPTY**
**CASSETTE 8*10 WAS NOT EMPTY**

These are customer messages that appear on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

"LOAD ONLY" was selected, but the CASSETTE that was entered contained a FILM.

16 **PLEASE PRESS CASSETTE EJECT BUTTON**

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

This message sometimes appears when the MINILOADER is switched on depending on the condition of the machine when it was switched off. When the CASSETTE EJECT BUTTON is pressed, the CASSETTE CONVEYOR will run in reverse for a short time. If a CASSETTE is inside the MINILOADER it should be ejected.

If the CASSETTE is not ejected, and it remains under PHOTOCELL FC1 (FC10 for VIDEO CASSETTES), the message "PLEASE CALL FOR SERVICE-ERROR CODE *73*" will be displayed. If the CASSETTE is jammed between FC1 (FC10 for VIDEO CASSETTES) and FC2, no error will be detected.

17 **FILMS USED 18*24**
**FILMS USED 24*30**

**FILMS USED 8*10**

These are customer messages that appear on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

The FILM COUNTS are displayed by pressing the LOAD CONTROL BUTTON, scrolling through UNLOAD ONLY, LOAD ONLY, FILMS USED 18*24, FILMS USED 24*30 and FILMS USED 8*10. The count that is currently being displayed can be zeroed by pressing the RESET BUTTON. These FILM COUNTS are for customer use and are different from the FILM COUNTS on the ESR/FE PRINTOUT.

## 18 RECEIVING MAGAZINE IS FULL

This is a customer message that appears only on the STAND-ALONE version of the MINILOADER.

PHOTOCELL FC7 has detected that the RECEIVING MAGAZINE has a full compliment of FILMS. The number of FILMS varies for the two configurations of the MINILOADER, see the SERVICE MANUAL.

## 19 CHANGING FORMAT

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

The SIZE CHANGE BUTTON has been pressed, and the CASSETTE GUIDES, ENTRY GUIDES, 8 x 10 END STOP and MAGAZINE CARRIAGE is being set for the new size. If the operation is successful, "MINILOADER READY FOR FORMAT XX*XX" will be displayed. Otherwise an ERROR MESSAGE will result.

## 20 CASSETTE WAS EMPTY

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

A normal (unload / load) or an unload only cycle has been attempted with a CASSETTE that was empty.

## 21 CASSETTE IS EMPTY

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

There is no FILM in the CASSETTE that has been ejected. This message is always displayed after an UNLOAD ONLY cycle.

## 22 PLEASE CALL FOR SERVICE-ERROR CODE *22*

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the

MINILOADER. It also appears on the MALFUNCTION STATISTICS.

A CAM SYSTEM MALFUNCTION has occurred. The CAM MOTOR was sent to an ENCODER POSITION and has not arrived within 11 seconds, or an unsuccessful CAM MOTOR reset has occurred.

Possible causes include FUSE F7, RELAYS K7F & K7R, the CAM MOTOR M7 or a physical jam that has prevented the CAM MOTOR from reaching the appropriate position.

A malfunction of the ENCODER can also cause this problem.

If the FUSE blows for no apparent reason, check that there is no mechanical tightness in the CAM SYSTEM.

### 23 PLEASE CALL FOR SERVICE-ERROR CODE *23*

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER. It also appears on the MALFUNCTION STATISTICS.

A TILT SYSTEM MALFUNCTION has occurred. The TILT MOTOR was sent to the either the HOME or TILTED position, and did not arrive within 4 seconds.

Possible causes include FUSE F5, RELAY K5, the TILT MOTOR M5, MICROSWITCHES MS3 & MS4 or a physical jam that has prevented the TILT MOTOR from reaching the appropriate position. Also check that the TILT SPEED POTENTIOMETER is not set for too slow a speed, causing the MOTOR to stall.

### 24 PLEASE CALL FOR SERVICE-ERROR CODE *24*

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER. It also appears on the MALFUNCTION STATISTICS.

A CASSETTES GUIDES MALFUNCTION has occurred. The CASSETTE GUIDES have been sent to another position and did not reach it in 4 seconds.

Possible causes include FUSE F21, RELAY K21, the CASSETTE GUIDE MOTOR M10, MICROSWITCHES MS5, MS6 & MS7 or a physical jam that has prevented the CASSETTE GUIDES from reaching the appropriate position.

Also check the 8 x 10 ENDSTOP is operating correctly and is not jamming the CASSETTE GUIDES.

### 25 PLEASE CALL FOR SERVICE-ERROR CODE *25*

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the

MINILOADER. It also appears on the MALFUNCTION STATISTICS.

A MAGAZINE CARRIAGE MALFUNCTION has occurred. The MAGAZINE CARRIAGE was sent to an end position and did not reach it within 4 seconds.

Possible causes include FUSE F15, RELAYS K15F, K15R & K23, the CARRIAGE MOTOR M8, MICROSWITCHES MS8 & MS9 or a physical jam that has prevented the CARRIAGE MOTOR from reaching the appropriate position. Also check that the SUPPLY MAGAZINE OPEN circuit is operating correctly.

### 26 PLEASE CALL FOR SERVICE-ERROR CODE *65*

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER. It also appears on the MALFUNCTION STATISTICS.

A BELT SYSTEM MALFUNCTION has occurred. This malfunction is caused by four successive CASSETTE POSITION MALFUNCTIONS. (See message 37).

### 27 PLEASE CALL FOR SERVICE-ERROR CODE *73*

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER. It also appears on the MALFUNCTION STATISTICS.
A CASSETTE has failed to EJECT and is still under PHOTOCELL FC1 (or FC10 for VIDEO CASSETTES).

The most probable cause of this is the CONVEYOR BELT will not run in reverse.

### 28 PLEASE CALL FOR SERVICE-ERROR CODE *75*

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER. It also appears on the MALFUNCTION STATISTICS.

An 8 x 10 ENDSTOP MALFUNCTION has occurred. The ENDSTOP was either raised or lowered and did not reach the new position within 4 seconds.

Possible causes include FUSE F25, RELAY K25, the ENDSTOP MOTOR M11, MICROSWITCHES MS16 & MS17 or a physical jam that has prevented the ENDSTOP MOTOR from reaching the appropriate position. Check that the 8 x 10 ENDSTOP is not catching on the CASSETTE GUIDES.

### 29 CASSETTE DID NOT OPEN

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the

MINILOADER. It is also listed on the MALFUNCTION STATISTICS.

When the appropriate ENCODER STEP was reached, PHOTOCELL FC3 had not seen the CASSETTE LID open.

Alternatively, the CASSETTE did open but the LID was dropped when the CASSETTE was closed to the blowing position after a FILM had been detected on the CASSETTE SCREEN.

## 30 FILM JAMMED IN CHUTE

This is a customer message that only appears on PROCESSOR INTERFACE versions of the MINILOADER. It is also listed on the MALFUNCTION STATISTICS.

A FILM has remained in either PHOTOCELL FC7 or FC9 for 30 seconds after a cycle has ended, or, when the CHUTE is checked before unloading the FILM from a CASSETTE, the previous FILM had not cleared the PHOTOCELL and the cycle had to be aborted.

## 31 CASSETTE IS NOT LOADED

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER. It is also shown on the MALFUNCTION STATISTICS as CASSETTE NOT RELOADED.

A new FILM was not loaded into the CASSETTE.

Possible causes include incorrect VACUUM, faulty SUCKERS, trapped or faulty VACUUM HOSE and misalignment of the SUCKER BAR.

## 32 RECEIVING MAGAZ. NOT IN CORRECT POSITION

This is a customer message that appears only on the STAND-ALONE version of the MINILOADER.

1) The RECEIVING MAGAZINE is not present or is incorrectly installed.

2) MICROSWITCH MS18 is maladjusted or faulty. Check mechanical adjustment and/or the operation of the MICROSWITCH in SENSOR TEST.

## 33 RECEIVING MAGAZINE IS OPEN

This is a customer message that appears only on the STAND-ALONE version of the MINILOADER.

At the end of the cycle, the RECEIVING MAGAZINE did not close although the CAM MOTOR has returned to

HOME POSITION. There may be a FILM sticking out of the MAGAZINE.

RECEIVING MAGAZINE OPEN is detected by PHOTOCELL FC 14.

34 **ATTENTION - WRONG RECEIVING MAGAZINE**

This is a customer message that appears only on the STAND-ALONE version of the MINILOADER.

The MINILOADER is set up for collection of FILMS in separate MAGAZINES, and the wrong MAGAZINE is installed for the size being attempted. The message will only show after a CASSETTE is entered.

35 **MAGAZINE 18*24 NOT IN CORRECT POSITION** PI ONLY
**SUPPLY MAGAZINE 18*24 NOT IN CORR. POSN.** SA ONLY
**MAGAZINE 24*30 NOT IN CORRECT POSITION** PI ONLY
**SUPPLY MAGAZINE 24*30 NOT IN CORR. POSN.** SA ONLY
**MAGAZINE 8*10 NOT IN CORRECT POSITION** PI ONLY
**SUPPLY MAGAZINE 8*10 NOT IN CORR. POSN.** SA ONLY

These are customer messages that appear on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER. Note that the text is slightly different for the two versions.

This message appears when the MAGAZINE CARRIAGE CHANGES position.

And a) There is no MAGAZINE installed
or b) An UPPER CARRIAGE MAGAZINE is in the LOWER CARRIAGE
or c) An LOWER CARRIAGE MAGAZINE is in the UPPER CARRIAGE
or d) Either MICROSWITCH MS1, MS2 or MS8 is faulty or maladjusted. MS1 (or MS2) depending on the CARRIAGE being used, must make before the CARRIAGE reches the STOP SCREW.

36 **MULTIPLE FILM LOAD**

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER. It is also listed on the MALFUNCTION STATISTICS.

The MULTIPLE FILM DETECTOR (PHOTOCELL FC8) detected more than one FILM loaded into the CASSETTE.

37 **CASSETTE POSITION MALFUNCTION**, and **PLEASE ENTER CASSETTE CORRECTLY**

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

A CASSETTE was entered and was not detected by the photocell at the CASSETTE ENDSTOP within the allowed time (3 seconds). The red LIGHT will be on, and the buzzer will sound.

Possible causes are:-

1. The reflective PATCH on the outside of the CASSETTE is missing or damaged.
2. PHOTOCELL FC1 [FC10 for video CASSETTE] is misaligned, too insensitive or faulty.
3. There is a physical obstruction that is preventing the CASSETTE from reaching the ENDSTOP. Check the CASSETTE entry path, and the CASSETTE GUIDES.
4. If the CASSETTE does not enter the MINILOADER completely, the CASSETTE CONVEYOR may not be running.

## 38 FILM NOT PICKED UP FROM CASSETTE

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER. It also appears on the MALFUNCTION STATISTICS as CASSETTE NOT UNLOADED.

The CASSETTE was loaded, but the FILM was not removed.

Possible causes include incorrect VACUUM, faulty SUCKERS, trapped or faulty VACUUM HOSE and misalignment of the SUCKER BAR.

## 39 ATTENTION - WRONG MAGAZINE

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

When the CASSETTE is entered, the MINILOADER checks to see that the correct MAGAZINE is present for the selected task. If the message appears, either:-

a) an attempt has been made to use a SERIAL MAGAZINE for a normal cycle
or b) SERIAL MODE has been attempted with a normal MAGAZINE
or c) 24 x 30 has been attempted with an 8 x 10 MAGAZINE installed
or d) 8 x 10 has been attempted with a 24 x 30 MAGAZINE installed.

If the correct MAGAZINE is present for the selected task, check the operation of the MAGAZINE CODING PHOTOCELLS FC6 and FC12.

## 40 ATTENTION - WRONG CASSETTE

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

This message can only appear if MODIFICATION M02 is fitted and selected active by DIPSWITCH 6 on PCB 301. This MODIFICATION was introduced to prevent a 24 X 30 CASSETTE being entered after 8 x 10 had been selected, and the 8 x 10 MAGAZINE was present.

When this MODIFICATION is active, all VIDEO CASSETTES require a second REFLECTIVE PATCH on the opposite side of the CASSETTE to the normal PATCH. If this patch is not detected by PHOTOCELL FC15, the 8 x 10 VIDEO CASSETTE will not be accepted, the conveyor belt will run in reverse, and the "WRONG CASSETTE" message will be displayed.

## 41 SUPPLY MAGAZINE IS OPEN

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

At the end of the cycle, when the CAM MOTOR reached HOME POSITION, the LID of the SUPPLY MAGAZINE did not close. There may be a FILM sticking out of the MAGAZINE. The OPEN MAGAZINE is detected by either PHOTOCELL FC20 for 18 x 24 or by FC21 for 24 x 30 and 8 x 10. These PHOTOCELLS operate RELAY K23 on PCB 205 to inhibit the MAGAZINE CARRIAGE MOTOR from driving with an open MAGAZINE. A signal is sent from PCB 205 to PCB 301 to call the message.

## 42 CASSETTE FAILED TO EJECT

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

At the end of the cycle, the CASSETTE CONVEYOR BELT MOTOR was energised in reverse to eject the CASSETTE, but the CASSETTE left PHOTOCELL FC1 and did not reach the ENTRY PHOTOCELL FC2.

Note, if the CASSETTE remains under PHOTOCELL FC1 after pressing the CASSETTE EJECT button the error message "PLEASE CALL FOR SERVICE-ERROR CODE *73* is displayed.

## 43 FILM STUCK TO SCREEN / CHECK CASSETTE IN DARKROOM / ORIGINAL FILM IN CASSETTE

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

The CASSETTE INJECTOR was unable to REMOVE the FILM from the CASSETTE SCREEN after 3 attempts.

Check the alignment of the CASSETTE INJECTOR, and ensure that the COMPRESSOR is reaching the minimum pressur of 2 bar.

## 44 CASSETTE IS LOADED WITH A NEW FILM / CHECK CASSETTE IN DARKROOM

This is a customer message that appears on both PROCESSOR INTERFACE and STAND-ALONE versions of the MINILOADER.

These messages only appear during operation with 8 x 10 VIDEO CASSETTES. As there are no REFLECTIVE PATCHES in the VIDEO CASSETTES, detection of whether a CASSETTE has been unloaded is by checking PHOTOCELL FC7. As the CASSETTE would already have been reloaded by the time the exposed FILM reaches FC7, this messaging is necessary.

If the operator knows that the CASSETTE was empty and they neglected to select "LOAD ONLY", the message can be ignored.

| Rev. Date | PCN No. | Pub.No. | Affected Pages | Description |
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| April 93 | 1 | 30080009 | All | Complete updataddition of all pages. |

HEALTH SCIENCES DIVISION

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